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Spruce budworm

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NOTES ON THE BIOLOGY OF THE SPRUCE BUDWORM

By

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NOTES ON THE BIOLOGY OF THE SPRUCE BUDWORM

DOUGLAS FIR

The infestation of the spruce budworm (Archips fumiferana Clems.) on Douglas fir increased considerably the past year in the stands in the area west of Fort Collins. Most of the observations were made in the North St. Vrain Canyon east of Estes Park, Colo., where a noticeable spread of the infestation occurred. Most of the information given in this report was secured by W. L. Howe and R. T. Stevenson.

Flight Period

Flight last summer appeared to be at about the same time as that of the year before*. In 1938 flight was about over on July 13. In 1939 flight appeared to be at its height on July 10, although considerable emergence was occurring on July 3. In the laboratory the first emergence occurred on June 29.

In the laboratory, however, the average transformation date of moths from pupae occurred July 6; the first transformation date was June 25, the last transformation date was July 16. These dates were secured from 45 pupae.

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*Memorandum on the spruce budworm in ponderosa pine and Douglas fir, by Donald De Leon, May 15, 1939.

Eggs and Larvae

No additional information was secured concerning the egg period or number of eggs laid per female. Egg masses were collected in the field and isolated in vials for possible parasite emergence but none occurred.

Two distinct color phases of larvae were observed; one phase was light yellowish brown, the other, dark brownish. These two color phases were separated for rearing but none transformed to pupae.

When collecting the practically full-grown larvae one would occasionally run across larvae a quarter the size of the typical larvae. These also were collected for rearing but none transformed.

Damage caused by the feeding of the developing larvae first became apparent about June 13 and continued to become more noticeable until the last week in June.

Pupal Period

Collections of larvae were made every day or so and kept on Douglas fir foliage in the laboratory. The foliage was examined daily for pupae, the pupae then isolated in order to secure the pupal period. First pupation occurred June 15. The last pupation occurred July 9. Greatest pupation occurred on June 23. These figures are based on 93 pupae. The average pupal period was 11.5 days. These figures are based on only 34 specimens as not all of the pupae whose dates of pupation were known transformed to moths.

PONDEROSA PINE

The infestation in the ponderosa pine stands of the Sugarloaf area appeared to be much less severe than it was in 1938. It was planned to go over the check plot in that area last fall to record the amount of damage but press of time did not permit this work, which could be done any time before extensive feeding by the overwintering larvae starts in the spring.

Noticeable damage was found for the first time in the North St. Vrain Canyon. It appeared to be most severe in the neighborhood of Lowdermilk Hill but evidence of larval activity could be found almost anywhere one looked for it in the Estes Park region.

Moths apparently from this host tree were in flight July 12. This is several weeks earlier than the flight period in the Sugarloaf area, but this is probably because the former area has a much warmer aspect.

PARASITES

Several species of ichneumonids and tachinids were reared from larvae and pupae of the Douglas fir strain. These have not yet been determined.

Respectfully submitted,

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